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09/926,676	11/30/2001	Jun Hirose	216636US3PCT	7865

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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER

ZERVIGON, RUDY

ART UNIT

PAPER NUMBER

1763

DATE MAILED: 08/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/926,676

Applicant(s)

HIROSE ET AL.

Examiner

Rudy Zervigon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 17-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 12 June 2003 is: a) ☐ approved b) ☒ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities: The page numbering is objected to. Pages "21/1" through "24/3" should be renumbered sequentially beginning with page 22 of the specification.

Appropriate correction is required.

### *Drawings*

2. The proposed drawing correction filed on June 12, 2003 has been disapproved because it is not in the form of a pen-and-ink sketch showing changes in red ink or with the changes otherwise highlighted. See MPEP § 608.02(v).

3. Figure 10 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to because the line for item 17 of Figure 1 does not touch the "substrate to be processed" that rests on 16a. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 17-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant's "conduction groove" is ambiguous. Applicant does not specify if the "conduction" is thermal conduction or electrical conduction.

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***Claim Rejections - 35 USC § 103***

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
8. Claims 17-19, 22, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Welch et al (USPat. 6,192,827) in view of Osaka et al (JP11-037315) and Maa (USPat. 4,771,805). Welch teaches a vacuum processing apparatus (Figure 1) comprising:
- i. a vacuum processing apparatus for generating a plasma (Figure 1; column 2, lines 10-21) including a vacuum processing chamber (24; Figure 1; column 4, lines 10-21) having a stage (220; Figure 5; column 6, lines 59-67) mounting a substrate to be processed; and a carrier port (54; Figure 2; column 4, lines 22-40), providing a port enabling the substrate to be carried onto and off the stage, as claimed by claims 17, 18, 19, 22, and 25 the apparatus further comprising:
  - ii. a deposit shield (50; Figure 3B; "chamber liner") disposed along an inner peripheral wall (a chamber "liner" must line the chamber inner wall – 50, Figure 2, 8) of the vacuum

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processing chamber and having a notch portion (94,96; Figure 9, 10) with a flat end face in an L-shape (see lower notch portion 94), the notch portion facing the carrier port (54; Figure 2; column 4, lines 22-40), as claimed by claims 17, 18, 19, 22, and 25

- iii. a shutter (60; Figure 2; column 4, lines 22-40) having a shape fitted into the notch portion (94,96; Figure 9, 10) of the deposit shield (50; Figure 3B; "chamber liner"), having an inside curvature as an even curvature of an inner surface of the deposit shield (50; Figure 3B; "chamber liner") when the shutter (60; Figure 2; column 4, lines 22-40) is fitted into the notch portion (94,96; Figure 9, 10), and disposed to be able to be elevated, as claimed by claims 17, 18, 19, 22, and 25

- iv. each of the deposit shield and the shutter is configured to have a ground potential (column 8, lines 9-14), as claimed by claims 17, 18, and 25
  - v. the shutter is configured to be retreated from the notch portion when moving the substrate in and out of the stage through the carrier port and configured to be fitted into the notch portion of the deposit shield when the plasma processing is conducted, thus surrounding a plasma generation region by the even curvature of the shutter and deposit shield thereby producing a uniform plasma, as claimed by claims 17, 18, and 25 – (Figure 9, 10; column 2, lines 10-65),
- Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is

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capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

- vi. wherein when the plasma is generated in the vacuum processing chamber, the shutter is raised by a shutter mechanism to be fitted into the notch portion thereby closing the carrier port and forming the same inner surface curvature as the even curvature of the inner surface of the deposit shield, as claimed by claim 18 – (Figure 9, 10; column 2, lines 10-65), Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter, 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

Welch does not teach:

- i. a shutter with a sealing groove for fitting an o-ring there into formed in an end face of the shutter opposing a flat side face of the deposit shield, as claimed by claims 17, 18, 19, 22
- ii. a “conduction” groove for fitting a spiral seal made of metal where the conduction groove is formed in the end face of the shutter parallel to and outside of the sealing groove, the spiral seal electrically connecting the deposit shield to the shutter, as claimed by claims 17, 18, 19, 22
- iii. the end face of his L-shaped cross section has a convex outer periphery, as claimed by claim 22

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Osaka teaches a gate valve shutter (32) with a groove (32/33 contour; Figure 2, 5) for fitting an o-ring (33 – see corresponding element on the other side of 32). The groove is shown to have a cross section having a square outer periphery. Maa teaches a metallic seal for a gate valve (column 1, lines 22-51).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Welch to add shape-compliant grooves around Welch's shutter to thereby accommodate a metallic O-ring as taught by Osaka and Maa.

Motivation for Welch to add shape-compliant grooves around Welch's shutter to thereby accommodate a metallic O-ring as taught by Osaka and Maa is to provide for a better hermetic seal between Welch's gate valve and seat therefore as taught by Osaka (“[Description of the Prior ART]”; Machine Translation) with an alternate and equivalent material of construction as taught by Maa.

9. Claims 21 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Welch et al (USPat. 6,192,827) and in view of Steger et al (USPat. 5,788,799). Welch is discussed above. However, Welch does not teach a deposit shield (50; Figure 3B; “chamber liner”) comprising a heating mechanism.

Steger teaches a similar plasma apparatus (Figure 1) including a chamber liner (102; column 6, lines 18-29) comprising a heating mechanism (110, Figure 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a heater in Welch's liner as taught by Steger.

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Motivation to add a heater in Welch's liner as taught by Steger is to provide for thermal protection of the liner (column 6, lines 18-29).

10. Claims 20, 23, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Welch et al (USPat. 6,192,827) and in view of Hamrah et al (USPat. 5,242,538). Welch is discussed above. However, Welch does not teach a disk-shaped evacuation plate disposed around the stage.

Hamrah teaches a similar plasma processing apparatus (Figure 2) including a disk-shaped evacuation plate (96; Figure 2; column 3, lines 14-29) disposed around the stage (70).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a disk-shaped evacuation plate disposed around Welch's support stage as taught by Hamrah.

Motivation to add a disk-shaped evacuation plate disposed around Welch's support stage is to direct exhaust flow as taught by Hamrah (column 3, lines 14-29).

### ***Response to Arguments***

11. Applicant's arguments filed June 12, 2003 have been fully considered but they are not persuasive.

12. A response to applicant's newly submitted drawings are addressed above.

13. With respect to Applicant's position that Welch cannot be combined with Osaka because Welch stated "the door never touches the liner during operation", however, Welch does also state that said separation is close to a quarter of a millimeter (column 2, line 49) to provide the necessary vacuum conditions for plasma generation (see "gap 90"; column 7, lines 30-48).

Additionally:



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14. In response to applicant's argument that there is no suggestion to combine the references of Welch and Osaka, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, there is teaching, suggestion, and motivation to do combine the references themselves of Osaka and Welch: "Motivation for Welch to add shape-compliant grooves around Welch's shutter to thereby accommodate a metallic O-ring as taught by Osaka and Maa is to provide for a better hermetic seal between Welch's gate valve and seat therefore as taught by Osaka ("[Description of the Prior ART]"; Machine Translation) with an alternate and equivalent material of construction as taught by Maa."

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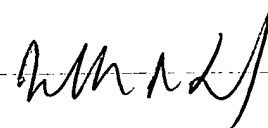
***Conclusion***

15. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (703) 305-1351. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official after final fax phone number for the 1763 art unit is (703) 872-9311. The official before final fax phone number for the 1763 art unit is (703) 872-9310. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (703) 308-0661. If the examiner can not be reached please contact the examiner's supervisor, Gregory L. Mills, at (703) 308-1633.



JEFFRIE R. LUNN  
PRIMARY EXAMINER